

# EXCALIBUR 3S Manual

PLEASE NOTE THIS IS A TEMPORARY MANUAL

**KEENCUT**  
THE WORLD'S FINEST CUTTING MACHINES



Thank you for choosing the Keencut Excalibur 3S. Every effort has been made to bring you a precision engineered product with the promise of many years of valuable service. In order to obtain maximum benefit from your machine please read these instructions carefully. For advice and assistance or replacement parts please contact your distributor or Keencut.

Single language versions and parts diagrams can be down loaded from [www.keencut.co.uk](http://www.keencut.co.uk)

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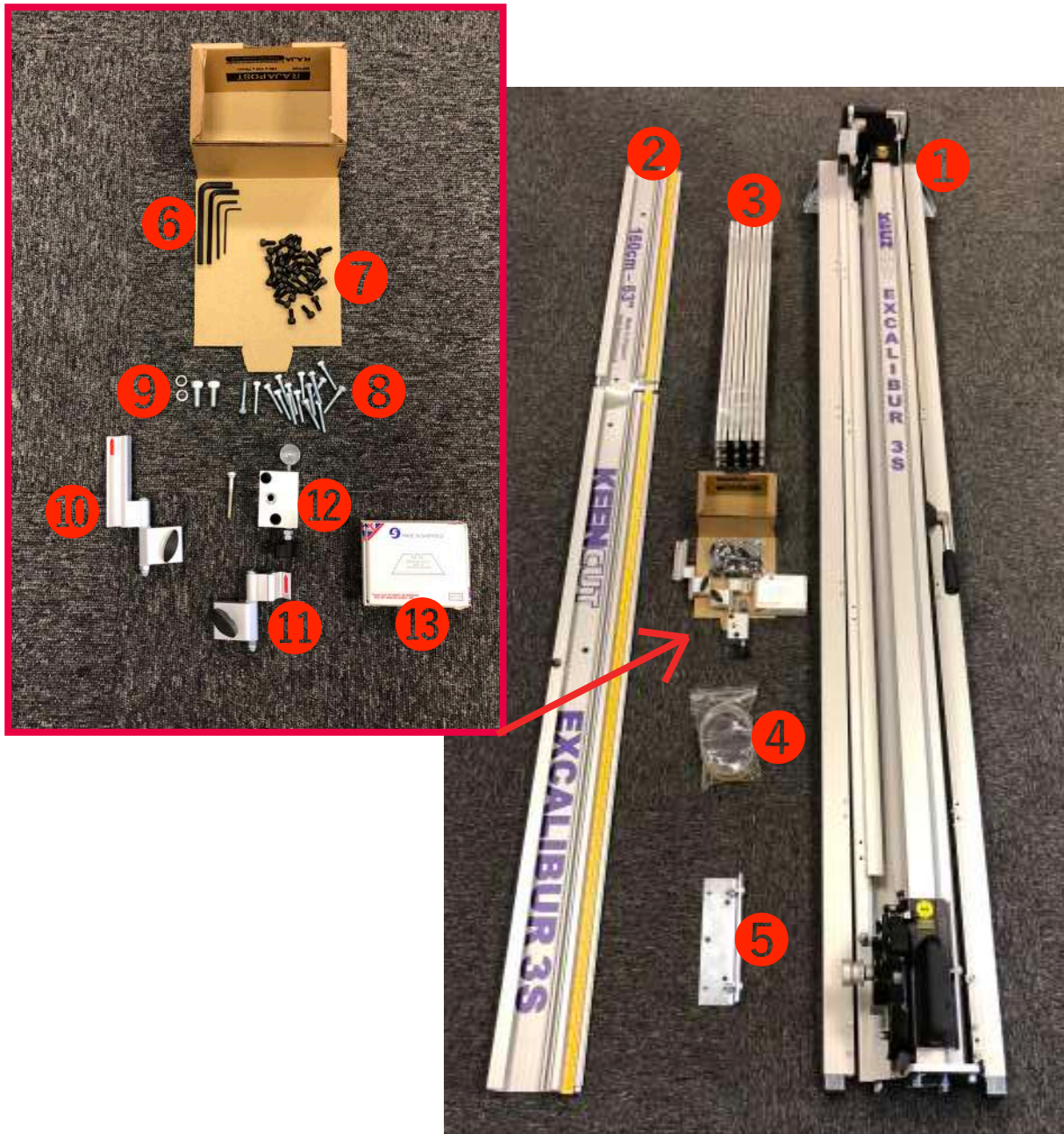
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## 2.1 Unpacking your machine



**NOTE:** \* When lifting the main body from the box, DO NOT lift using the black handles on the cutters.

- |    |   |     |  |
|----|---|-----|--|
| 1. | Main body *                               | 7.  | Short support arm screws               |
| 2. | Squaring arm                              | 8.  | Long support arm fixing screws         |
| 3. | Left & right hand support arms            | 9.  | Leg fixing screws & washers            |
| 4. | Vertical scale & spare sightline strip    | 10. | Left hand production stop              |
| 5. | Wall mounting bracket                     | 11. | Right hand production stop             |
| 6. | Hexagon wrenches<br>2.0, 3.0, 5.0, 6.0 mm | 12. | Squaring adjuster block & fixing screw |
|    |   | 13. | Spare blades                           |





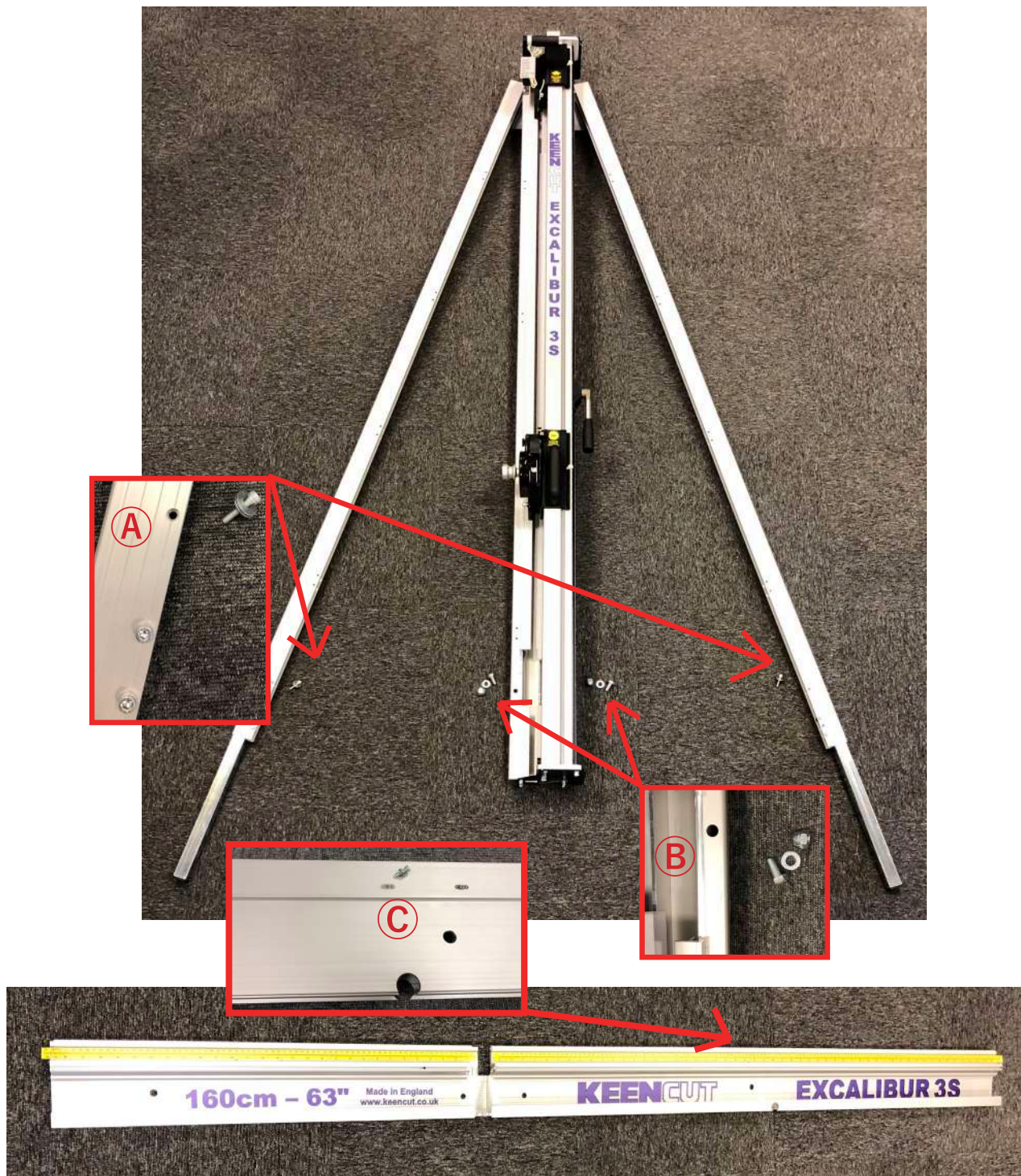
The first stages of assembly are carried out with the machine laying on the floor.

**NOTE:** When lifting the main body from the box do not lift using the black handles on the cutters.  
**DO NOT** untie balance weight cord at this stage.

Remove the main body from the box and lay it on the floor, remove the packaging from the bottom end.

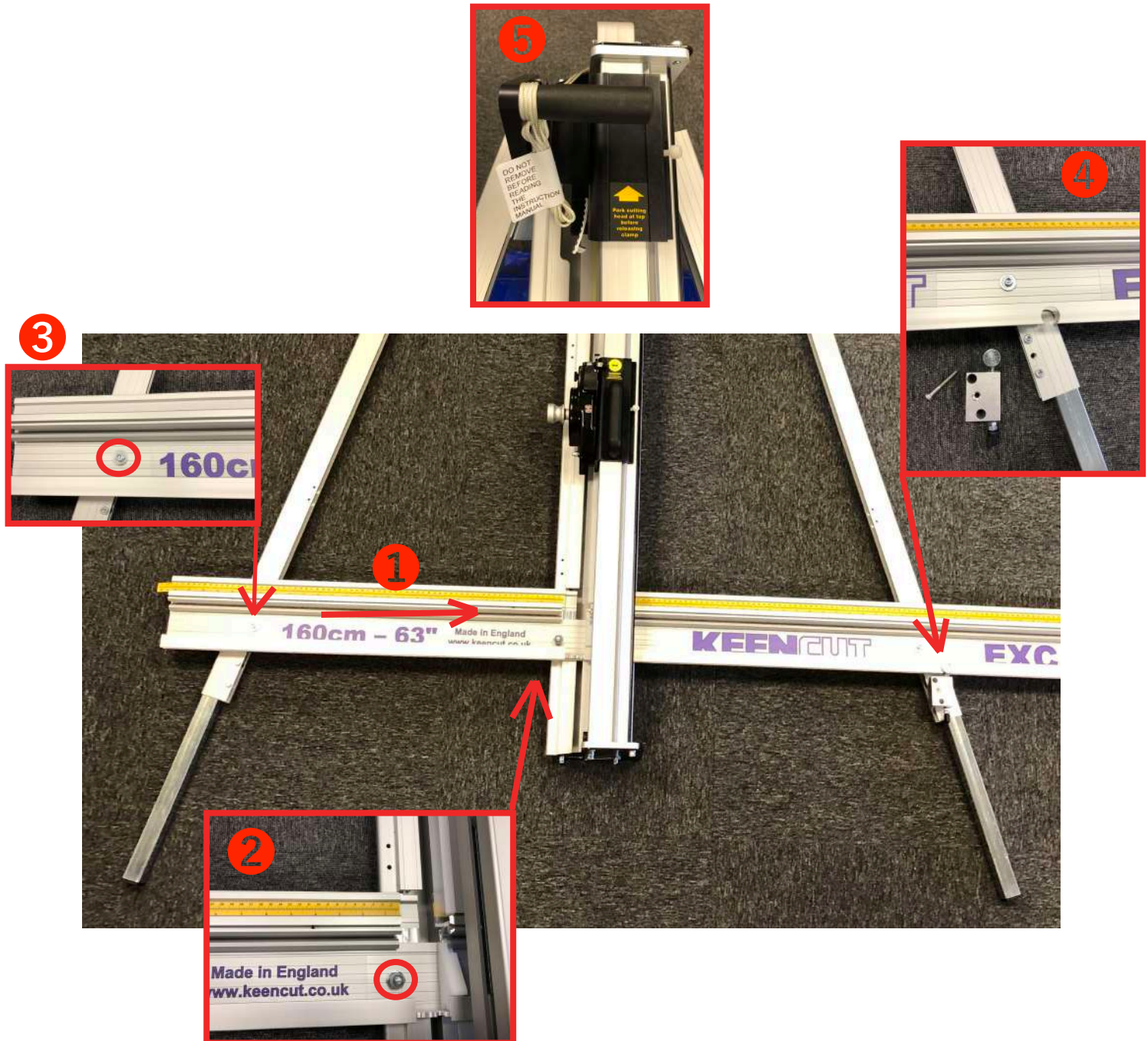
1. Slacken the bottom two screws on each leg using the 5mm hexagon wrench and extend the telescopic parts to the desired length. (These can be re-adjusted later before fixing the machine to the wall). Tighten screws firmly to clamp in position.
2. Swing both legs outwards as far as they will go.



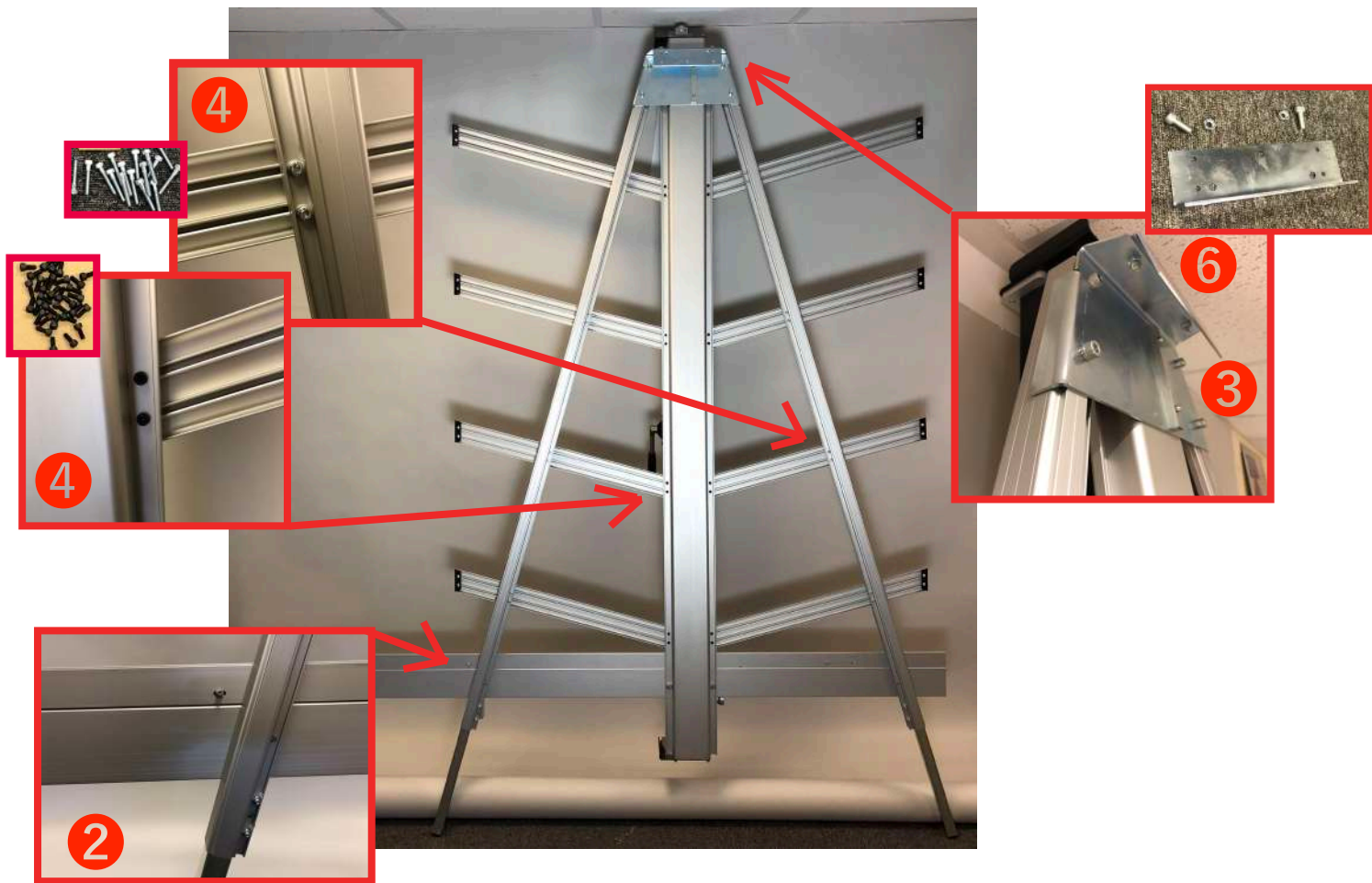


1. Move the lower cutting head to the middle of the main body.
2. Remove the following:
  - A. One screw from each leg, using 5mm hexagon wrench.
  - B. Two sets of hexagon headed bolts, washers and nuts from the main body using 17mm spanners.
  - C. Remove small screw and two washers from the back of the squaring arm using 3mm hexagon wrench. (Right hand side ONLY).





1. Slide the squaring arm in from the left hand side through the gap in the main body and align the corresponding screw holes.
2. Fit the two hexagon bolts from the back of the main body, fit the washers and nuts finger tight only.
3. Fit the screws through the squaring arm into the leg using the 5mm hexagon wrench, do not tighten fully.
4. Refit the squaring adjuster block by firstly sliding the steel bar into the opening in the squaring arm, then align the heads of the two screws in the leg to fit the top and bottom holes in the adjuster block. The screws fixing the squaring arm to the machine should still be loose and allow it some movement to help alignment. Insert and tighten the screw in the middle hole.
5. Tighten the two hexagon bolts and screws as in 2 and 3 above.
6. Untie and release the balance weight cord, ensure the clamp is closed by pushing down on the clamp handle then slide the both cutting heads to the bottom.



1. Get help to slowly lift the machine and lean it so the front faces towards the wall. Carefully place a scrap of card or board between the top end of the machine and the wall to prevent any damage.

**NOTE:** Ensure the machine is tied or held in position safely whilst the following steps are carried out.

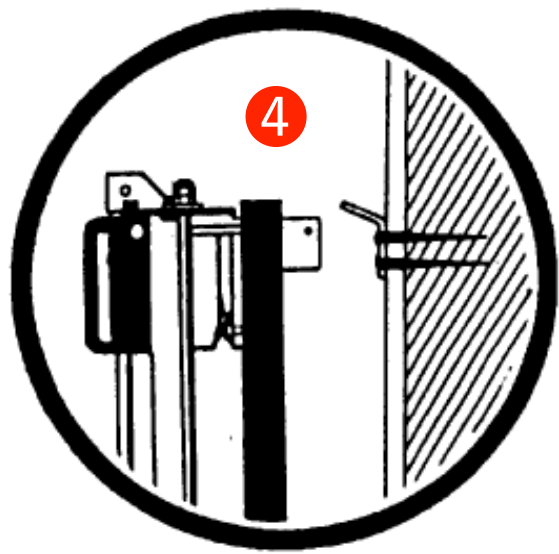
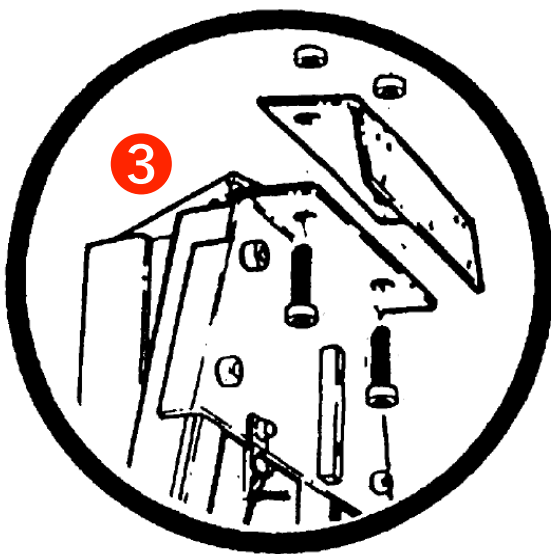
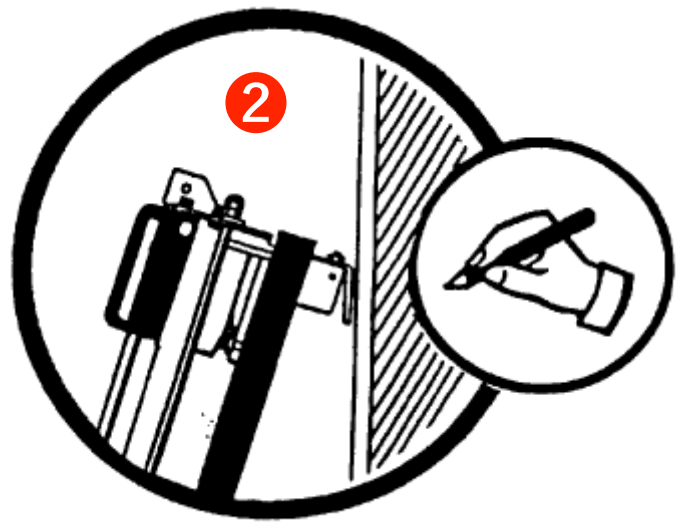
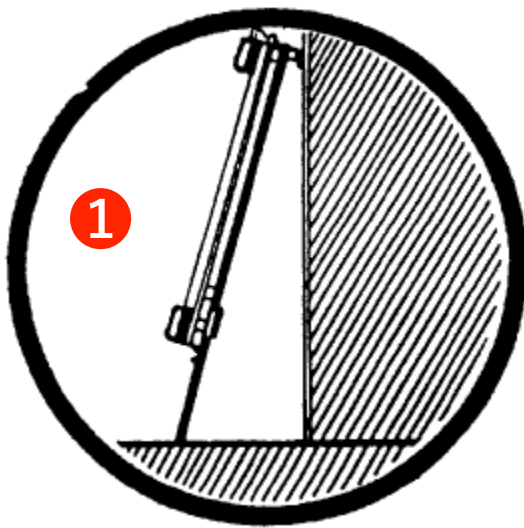
2. Replace the screw and two washers in the squaring arm using the 3mm hexagon key.
3. Fit the two screws to secure the legs at the top of the main body using the 6mm hexagon key, tighten both screws fully. Tighten the other two adjacent screws.
4. Fit the support arms:

**NOTE:** The screws fit into special grooves in the underside of the supports. The grooves have teeth on their sides to match the teeth of the screw thread, the screw can be fitted in the groove anywhere along its length but be careful to make sure the screw is kept perpendicular to the Support and not screwed in out of line.

Use one of the long screws in each of the holes along the legs of the machine and short screws to fix the support arm to the main body. Ensure the ends of the supports are firmly against the main body and the screws are aligned with the special grooves as explained above.

5. If a free standing kit is to be fitted to the machine proceed directly to page 3.6.
6. Fit the wall mounting bracket to the top of the main body, fasten the screws finger tight only.





**NOTE A:** If you are going to fit the free standing kit (optional) turn to next page.

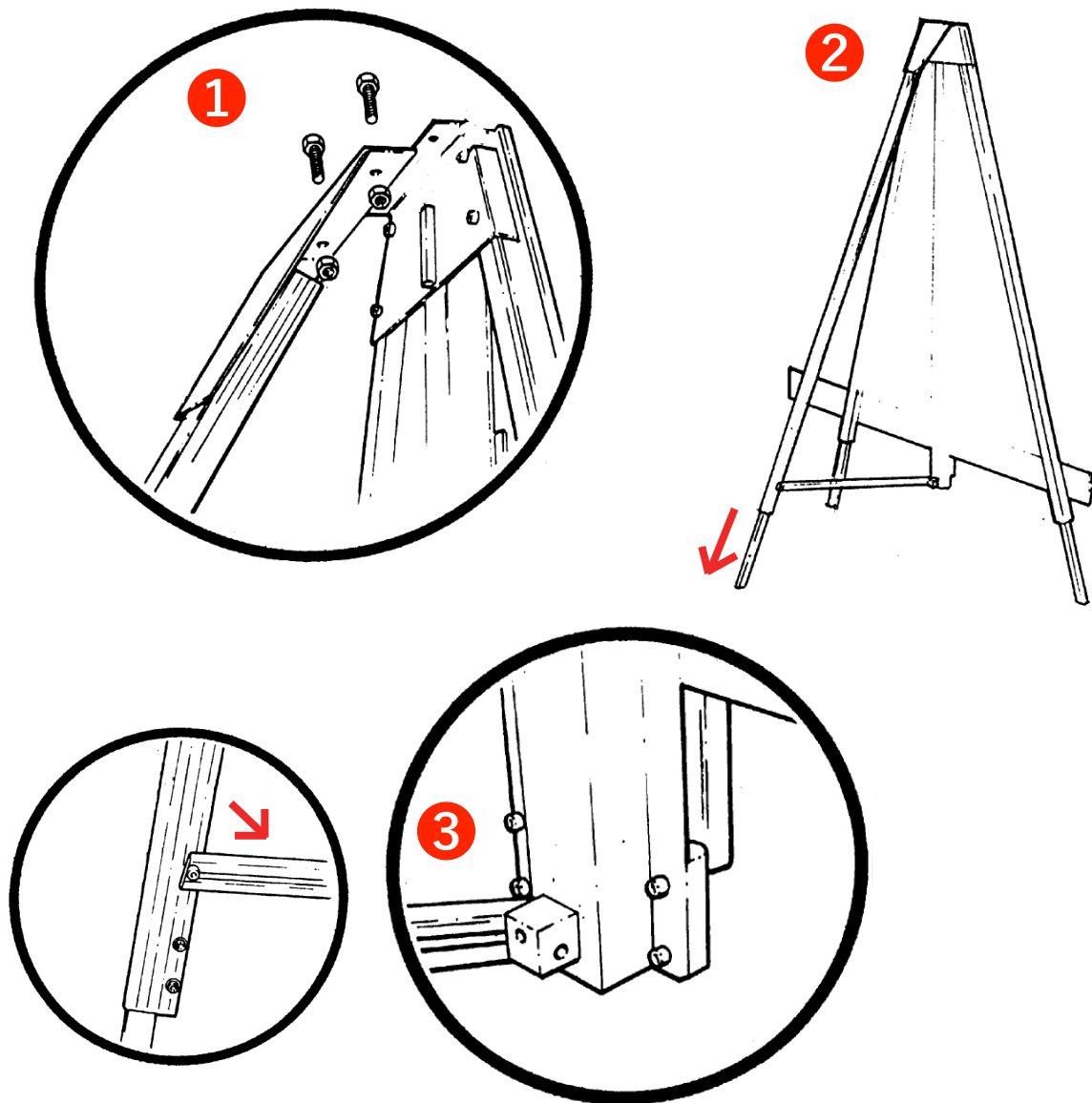
**NOTE B:** Ensure the wall is stable and use the appropriate fixings.

1. Stand the machine vertical and turn around so the machine is now facing away from the wall.
2. The wall mounting bracket should lay flush against the wall. Mark the position of the wall fixings with a short pencil.
3. Move the machine away and remove the wall mounting bracket.
4. Attach the bracket to the wall in the marked position with appropriate fixings then reposition and fasten the machine to the bracket.

Proceed to page 4.1.



**NOTE:** The *free standing kit* is an **optional** extra and does not come packed with the main machine.

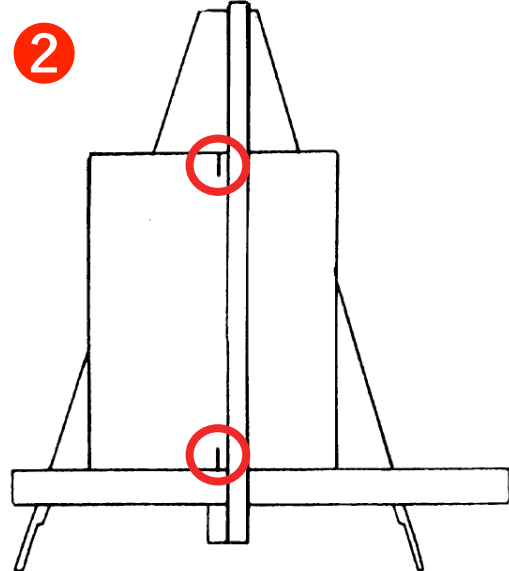
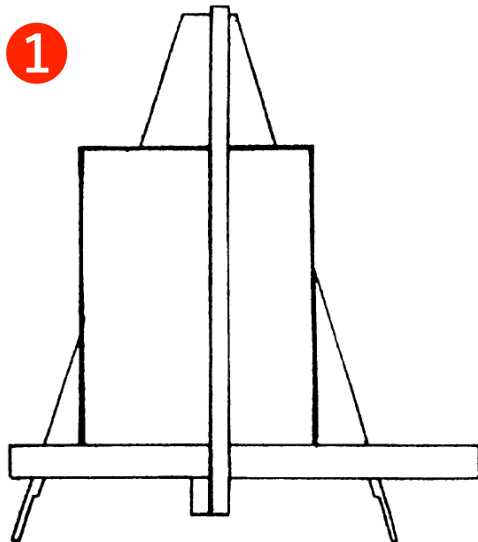


1. Attach the bracket to the top of the machine using the nuts and screws (provided with the main machine).  
Extend the telescopic leg to the same length as the front legs less 12cm (5").

***Assistance will be needed for the following stages***

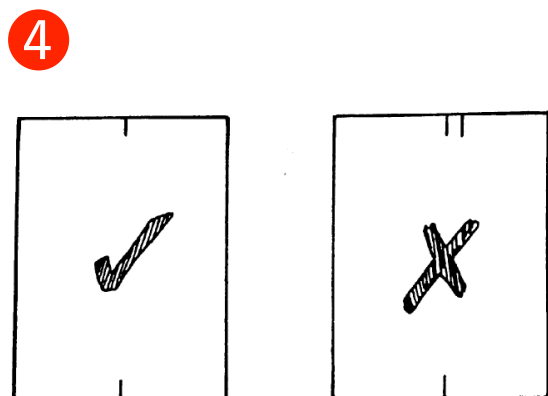
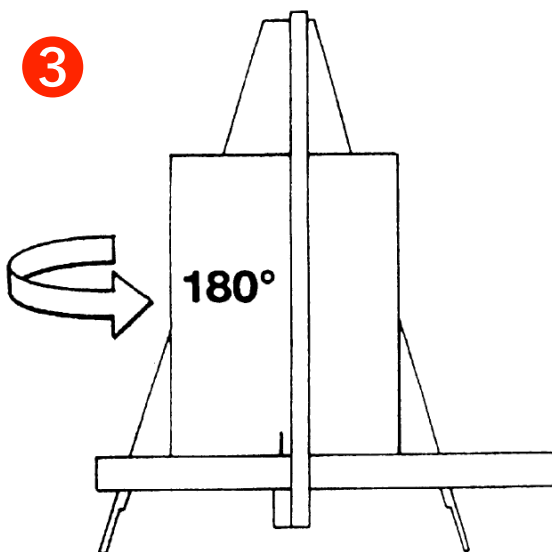
2. Get help to stand the machine up and hold it while the free standing leg is fixed to the bracket using the 6mm hexagon wrench.
3. Swing down the stay and attach the fixing block to the back of the main body, tighten all three screw on the stay (using 5mm & 6mm hexagon wrenches).
4. Extend the telescopic leg so the machine stands evenly.

For your machine to produce accurate square cuts the main body needs to be set so that it is  $90^\circ$  to the squaring arm, for the following procedure you will need a piece of card or mount board at least 60cm x 100cm (2' x 3'). The larger the board the more accurate you can set the machine.



Place the board on the machine vertically as shown and apply the clamp ensuring the bottom edge is in firm contact with the squaring arm.

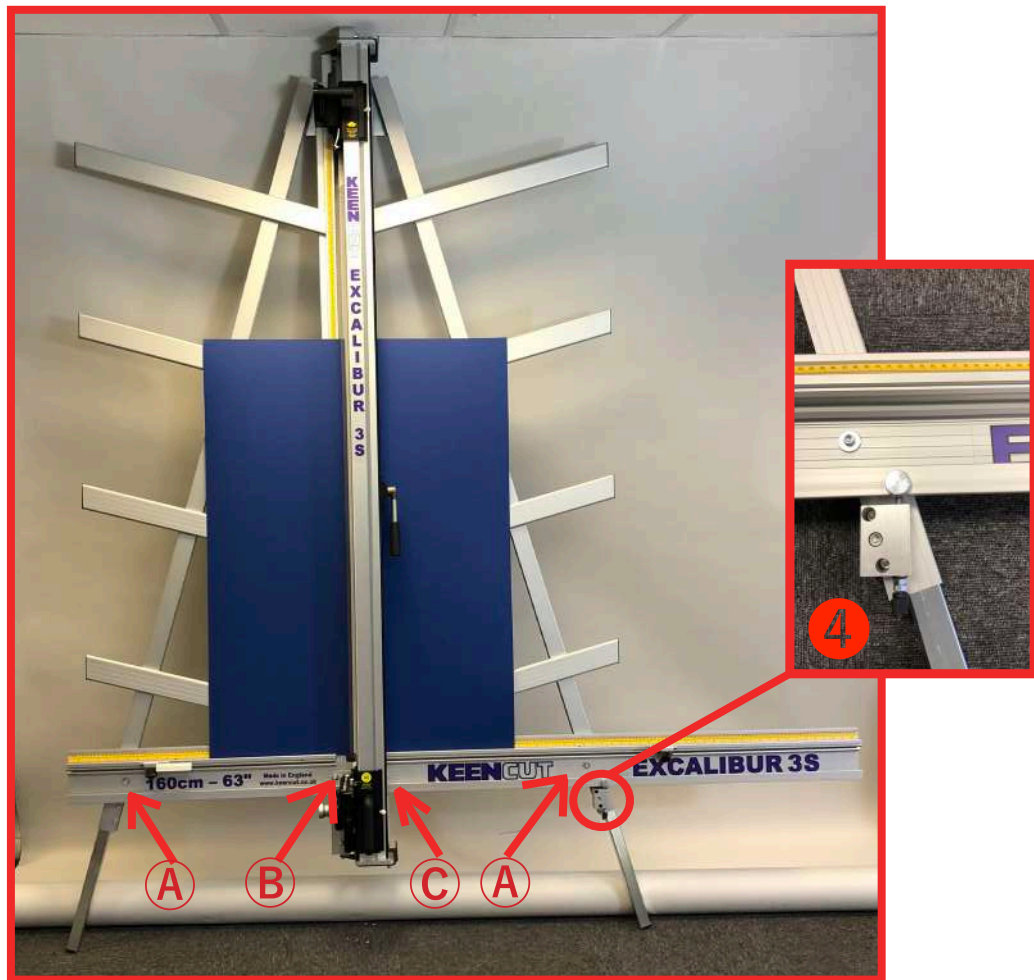
Select the cutting blade on the lower cutting head (see section 6). Cut into the top board to produce a cut approximately 3cm (1") long. Disengage the cutter using the cutter release lever. Lower the cutter and make a similar cut at the bottom of the board.



Unclamp and turn the board around (like the page in a book) and place it back in the machine so the same edge is still on the squaring arm but do not clamp it. Align and engage the blade so it enters the previous made cut at the bottom edge of the board. Now apply the clamp.

Raise the cutter to the top of the board, if the machine is square the blade should enter the same cut as made previously. If not refer to the following page to make the necessary adjustment.

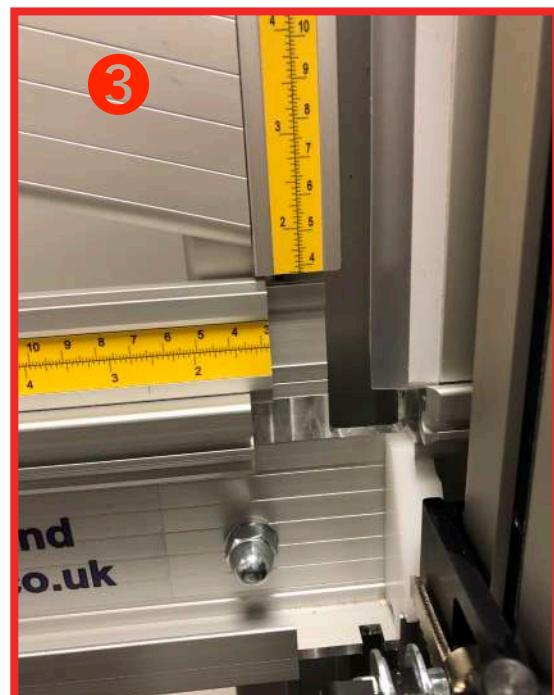




**NOTE:** Before making any adjustments carry out the squareness check as described in the previous page.

It is assumed that the board used for the test is still clamped in the machine. From the test results determine if the last cut made in the top of the board is to the left or right of the previous cut, as shown above:

1. Slacken the two screws (A) joining the squaring arm to the two legs.
2. Slacken the left hand nut (B) joining the squaring arm to the main body, make sure the right hand nut (C) is tight.
3. Release the clamp and position the board such that the blade is held in the cut on the bottom edge of the board. Press down on the board to make sure it is in good contact with the squaring arm.
4. Turn the squaring adjustment knob (4) on the right hand leg in the direction described next dependent upon the position of the top two cuts. If the second cut is to the right of the first cut turn the adjustment screw clockwise when viewed from underneath. If the second cut is to the left of the first cut turn the adjustment screw counter-clockwise when viewed from underneath. The adjustment screw should be moved so that when the blade is moved to the top of the board it cuts between two existing cuts, the plastic sightline fixed to the edge of the clamp gives an indication where the machine is going to cut.
5. Repeat the squareness check.
6. Tighten the screws/nut (A, & B).



1. Trim the bottom of the scale at zero with scissors.
2. Remove the paper backing tape and carefully place the rule adjacent to its groove in the main body and with the zero end resting inside the material channel of the squaring arm. When aligned stick the rule in its groove.
3. Again trim the rule at the bottom end as shown.

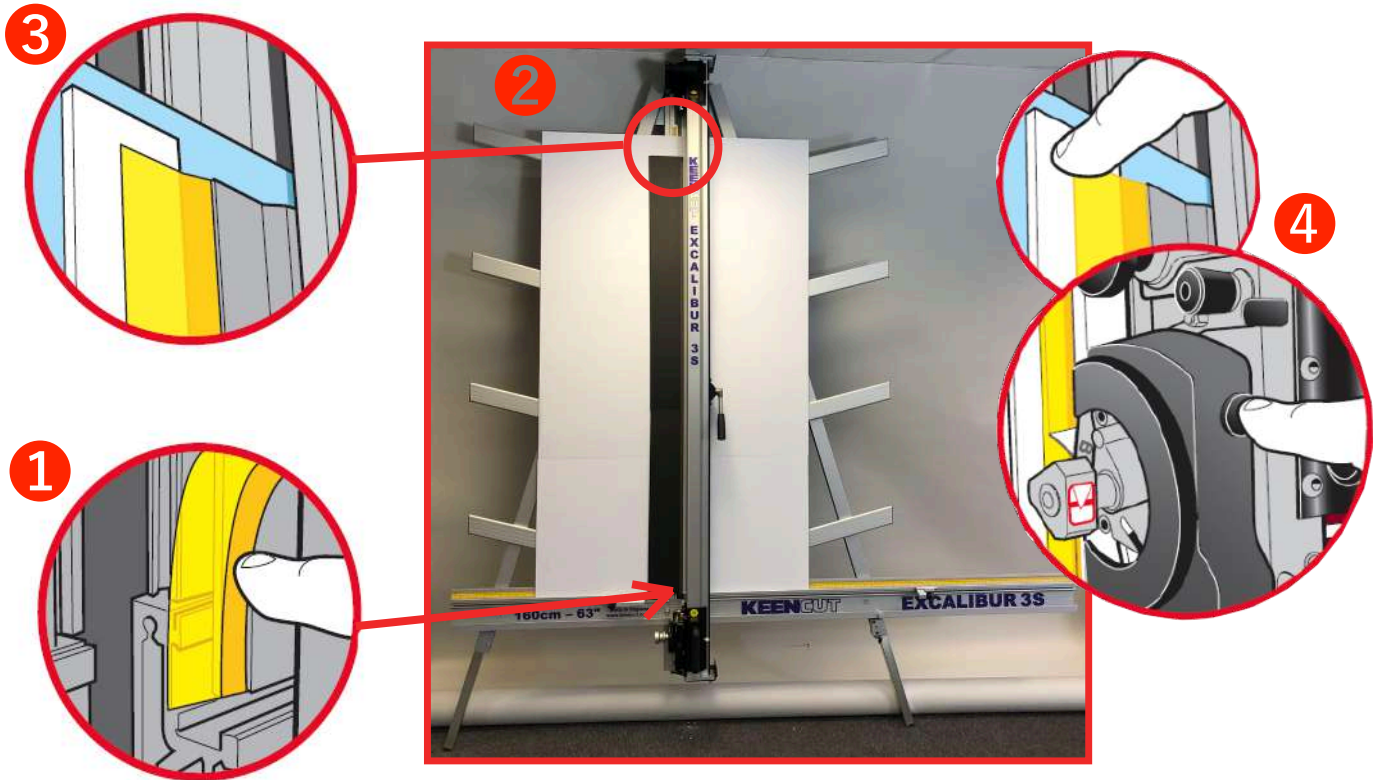




The top edge of the squaring arm slides left to right to enable calibration. Use the 3mm hexagon wrench to loosen the screw in the back of the squaring arm if adjustment is necessary.

1. Slide the production stop onto the outside edge of the squaring arm as shown.
2. Clamp a piece of card in the machine and move the production stop to it.
3. Cut the card and measure, adjust the sliding scale so that the production stop indicates the measured size.
4. Repeat the process for the other side of the machine.

**NOTE:** The sightline strip is fitted to your machine but may wear or get marked with use. A spare strip is included with the machine, replacement strips are available from your distributor or Keencut.



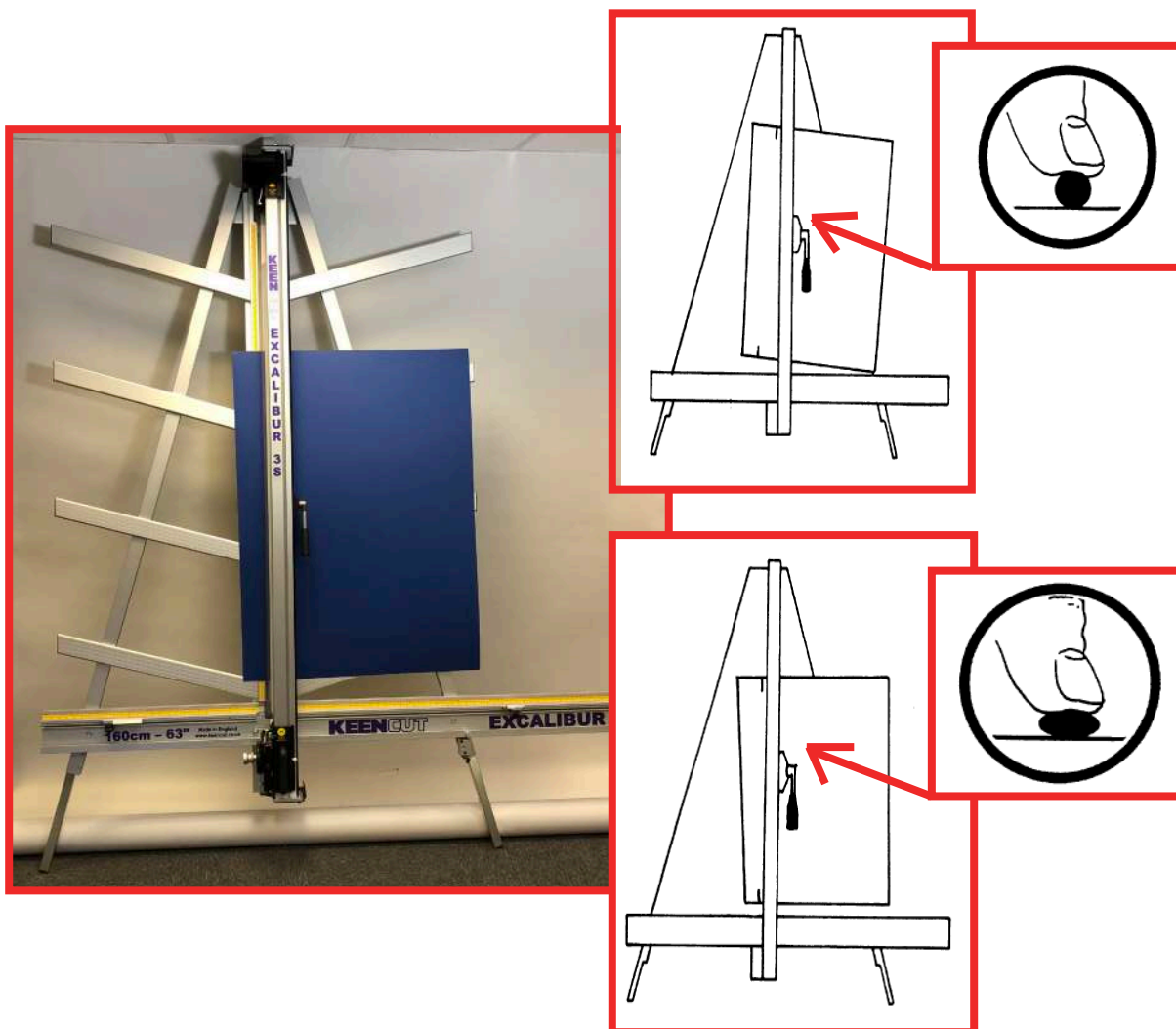
The sightline strip is fixed to the clamp and then trimmed using the cutting blade to give an accurate guide when cutting to trim lines, the edge of an image or pencil marks.

**NOTE:** Do not engage the twin wheel cutter until after reading its instructions for use in section 6. Engaging the twin wheel cutter interferes with the sightline strip and can cause damage to it. A gap is left in the sightline strip at a convenient height to enable the twin wheel cutter to be engaged.

1. Remove the worn sightline strip by peeling it off and clean any surplus adhesive with solvent cleaner on a cloth. Remove the backing paper and starting at the bottom press the strip firmly in the channel provided working upwards and cut off at a convenient height. Leave a gap of 18cm (7") and then fit the remainder of the strip.
2. Place a piece of firm board up to 6mm (1/4") thick on the machine to bridge the gap running down the back of the main body, this needs to be the full height of the clamp.
3. Place a piece of card or foam board 3-6mm (1/8"-1/4") thick under the full length of the flexible part of the sightline strip, not under the aluminium clamp itself. Depress the clamp handle so that the sightline strip is pressed flat across the surface of the board.
4. Keep fingers clear and using a block or tool hold down the top left corner of the strip to start the cut. With the turret ratchet disengaged (scoring page 6) press the blade lightly on to the surface of the sightline strip and score along the full length. Repeat and trim the sightline strip in 2 or 3 cuts.

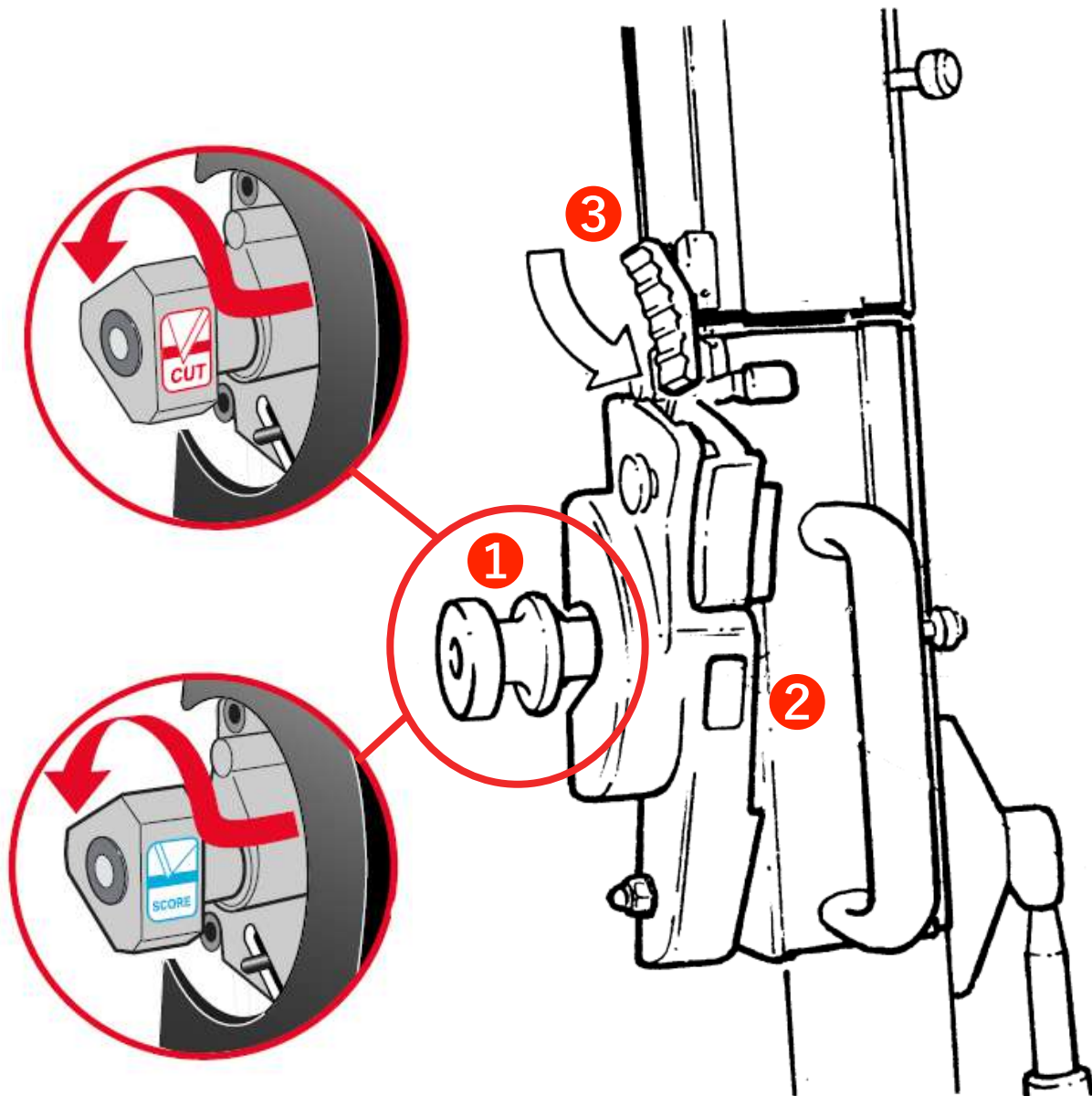
**NOTE:** If a board is not available to go the full length of the clamp use two or more pieces or trim the strip in stages.





The clamping system enables the operator to control the grip pressure by means of an integral friction brake, that maintains the clamping force at the pressure applied by the operating lever. Soft materials can be held firmly without sustaining damage and solid materials are held rigidly without movement. By following the guidelines below it will help you to get the most from the machine.

USE	CLAMPING INSTRUCTIONS
Soft materials such as Foamcore boards, lightweight card, etc.	Use light to medium pressure. The underside of the clamp grips an area nearly 4cm (1 1/2") wide with a non-marking sponge rubber and reasonable force can be applied. If in doubt clamp a sample first with the good surface facing outwards.
Harder materials such as PVC foam board, MDF or composite boards such as Dibond.	Use medium to heavy pressure.
Cropping to trim lines, pencil marks, etc. (see drawing).	Place material in approximate position under clamp, apply light clamp pressure to allow the material to be repositioned. Align the trim marks with the edge of the sightline strip and clamp.



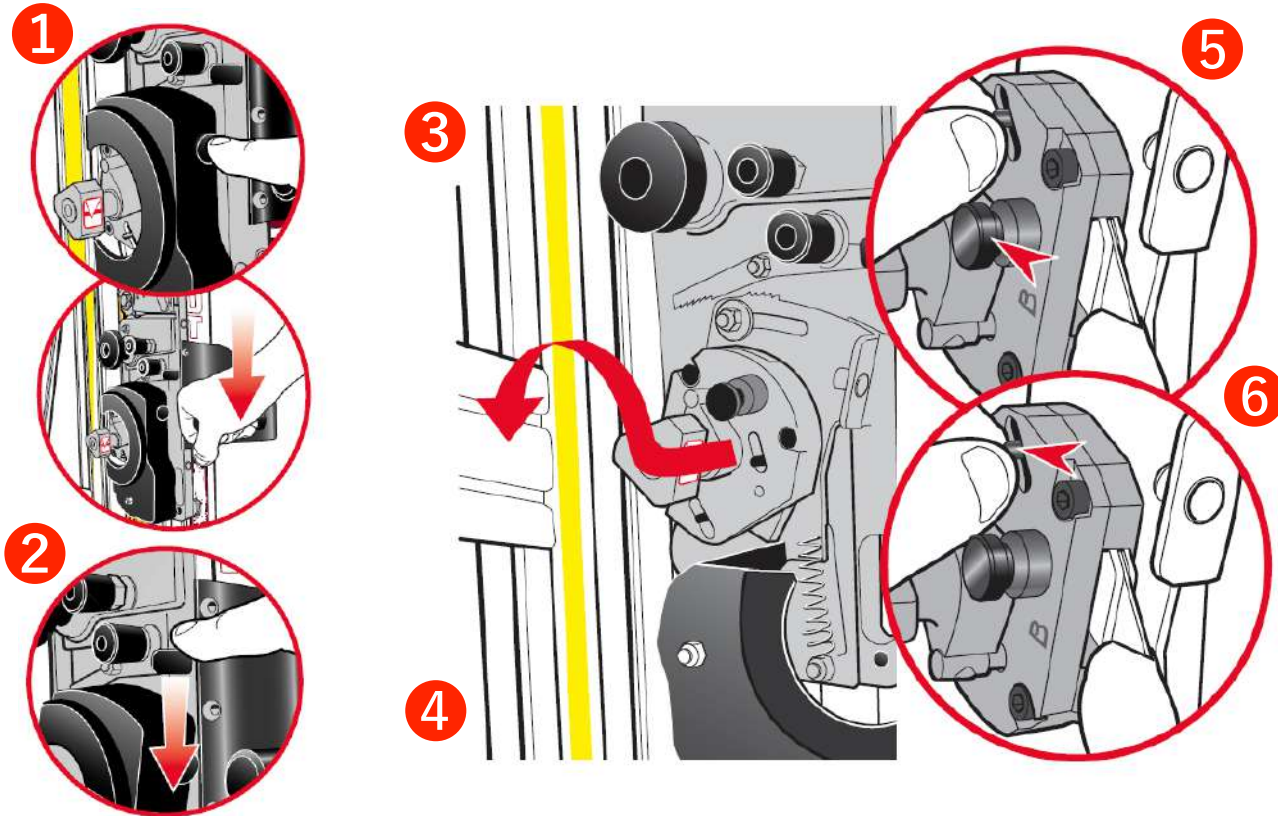
The Excalbur 3S is fitted with two sliding carriages running on a vertical slideway and each carriage is fitted with a cutting head. The top carriage is fitted with a twin wheel cutter for use with rigid boards such as aluminium composite panels, MDF, hardboards. Refer to 'Using the twin wheel cutter' for more details. The lower or multi-tool cutter head has a rotating turret arrangement where either of the two cutting tools can be selected:

#### *The cutting blade*

#### *The scoring blade*

1. To select a different cutter pull the turret handle out to the left about 6mm (1/4") and rotate in either direction, the turret will click into the correct position for the cutter indicated. Please note that there are three positions on the turret but only two positions are used on this version of the Excalibur.
2. The indicator label seen in the cutter guard window shows which cutter is active.
3. The counterbalance can be attached to either cutting head for easy, fatigue free working. it is normally attached to the twin wheel cutter but to attach it to the multi-cutter head, lock the twin wheel carriage in place using the white plastic thumb screw. Raise the multi-cutter to engage the counterbalance rocker, press the lower head of the rocker to connect it to the carriage.





**Basic cutting technique:** Select the cutting blade position on the turret and clamp the material in the machine.

Move the cutting head beyond the top of the material to be cut.

1. Press to engage the cutter. Draw the cutter down to the bottom of the machine where it will disengage automatically.
2. Should you engage the cutter by mistake or for any reason want to disengage the cutter without moving it to the bottom of the machine pull down the cutter and release lever.

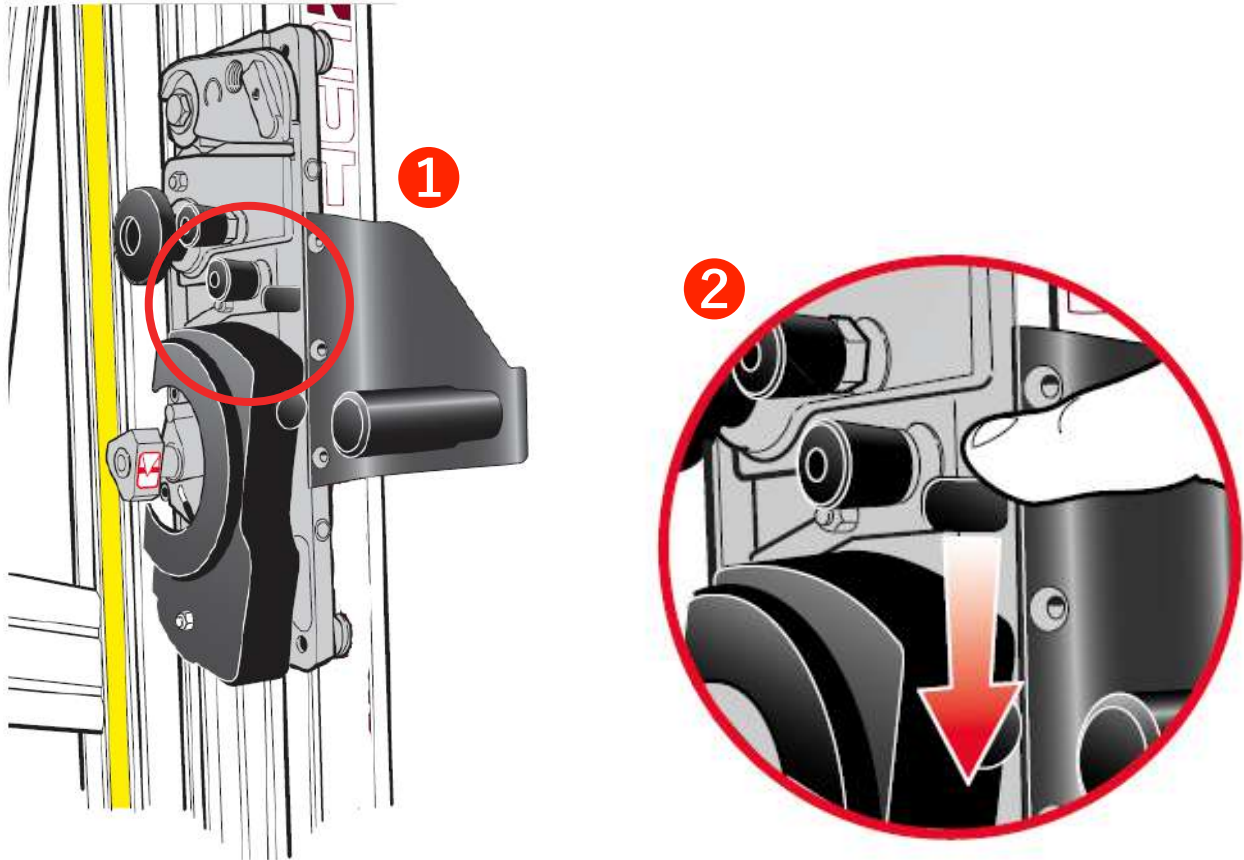
**Using the blade support plates:** The two support plates either side of the blade are designed to give maximum rigidity of the blade when cutting hard or dense materials. To adjust the support plates swing down the cutter guard by undoing the guard locking knob.

3. Turn the turret  $\frac{1}{2}$  turn until blade is pointing towards you and unlock the blade clamping screw. The support plates can be adjusted by sliding the black pin in the slot. Move the plates to suit the material.

*For cutting most materials the support plates can be set about 12mm (1/2") from the blade tip.*

#### Changing the cutting blade:

4. Unlock and swing down the cutter guard, rotate the turret so the cutting blade is facing outwards.
5. Undo the blade clamping screw a number of turns to release the blade.
6. Change or turn over the blade, insert it back into the turret as far as it will go. Tighten the blade clamping screw, the safety pin will engage to hold the blade in position. At this point the position of the blade support plates can be adjusted to suit the thickness of material being cut, further tightening of the screw will clamp the blade in position.
7. Rotate the turret back to the cutting position. Replace the guard ensuring it is locked closed.



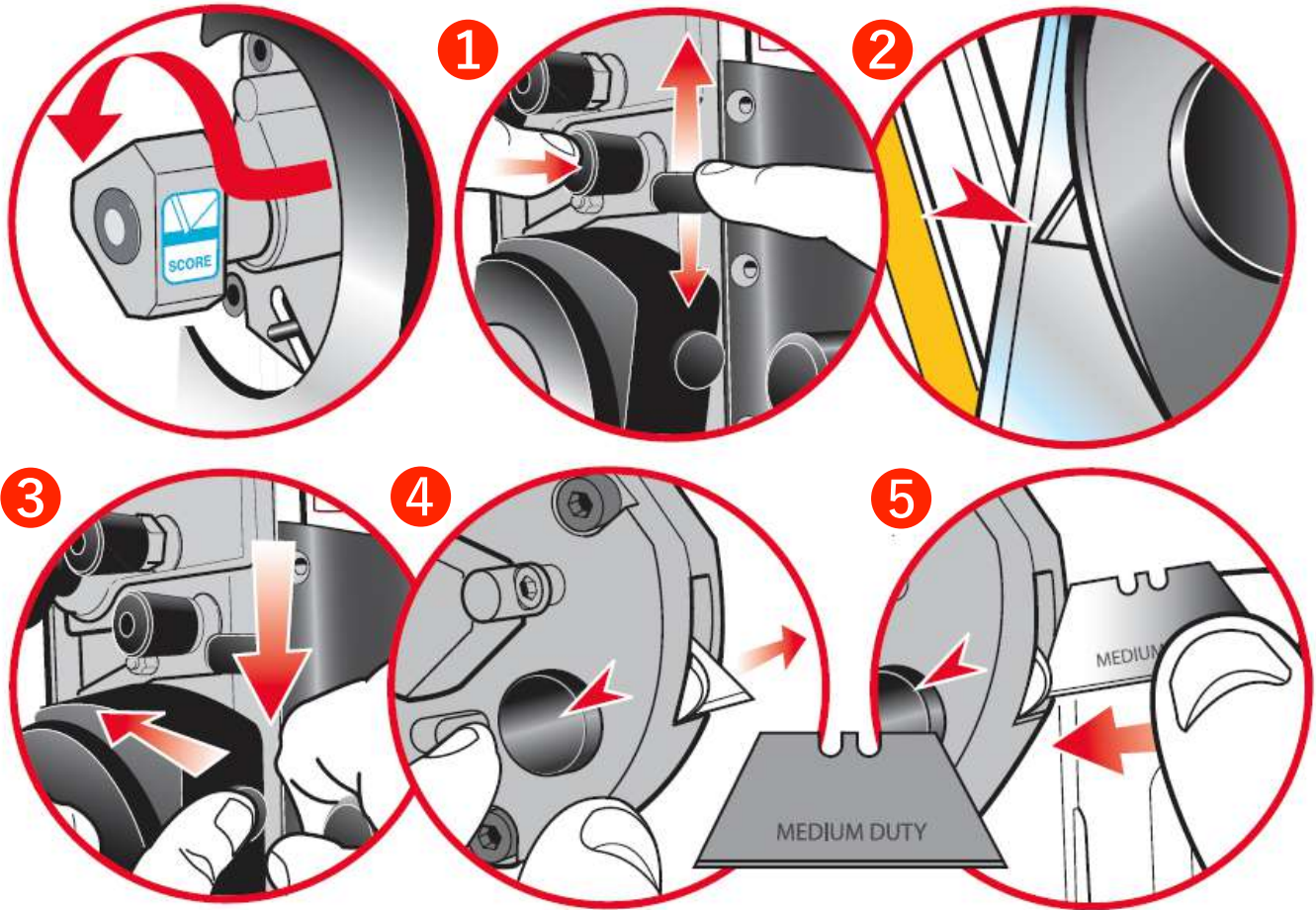
### Ratchet latch

1. A unique feature of the Excalibur is the 'ratchet latch', this enables thick dense materials such as PVC foam board to be cut easily in stages. Count the number of 'clicks' to position the blade just below the surface of the material to make your first cut then add an extra 'click' for the second and subsequent cuts.
2. Pull down the latch lever to disengage the ratchet if required.

As a rough guide when cutting PVC foam boards:

THICKNESS	TAKE
3MM (1/8")	Initial surface cut + 1 additional cut
5MM (1/4")	Initial surface cut + 1 or 2 additional cuts
10MM (3/8")	Initial surface cut + 3 or 4 additional cuts

3. Should you engage the cutter by mistake or for any reason want to disengage the cutter without moving it to the bottom of the machine pull down the cutter release lever.
4. For some operations (such as scoring acrylic) the ratchet latch needs to be disengaged, so that finger pressure is used to make the score/cut. This is done by pulling the black knob on the edge of the spring spool down to face towards the user. To re-engage the ratchet latch push the small black knob away so it points upwards.



The scoring blade is designed to score acrylics, Plexiglas and other similar rigid plastics. Trials should be carried out on scrap materials first to ensure you obtain the required standard of cut.

### Scoring/breaking technique

Select the scoring blade position on the turret and clamp the material in the machine.

1. Turn the ratchet hold-off knob to disengage the ratchet.
2. Clamp the plastic to be scored in the machine, position and depress the cutting head so the blade touches the plastic at the top.
3. Apply thumb pressure to the cutter and draw the blade down the material in one continuous motion.
4. Remove the plastic from the machine and snap it by hand.

**CAUTION ALWAYS USE HAND AND EYE PROTECTION WHEN SNAPPING PLASTIC**

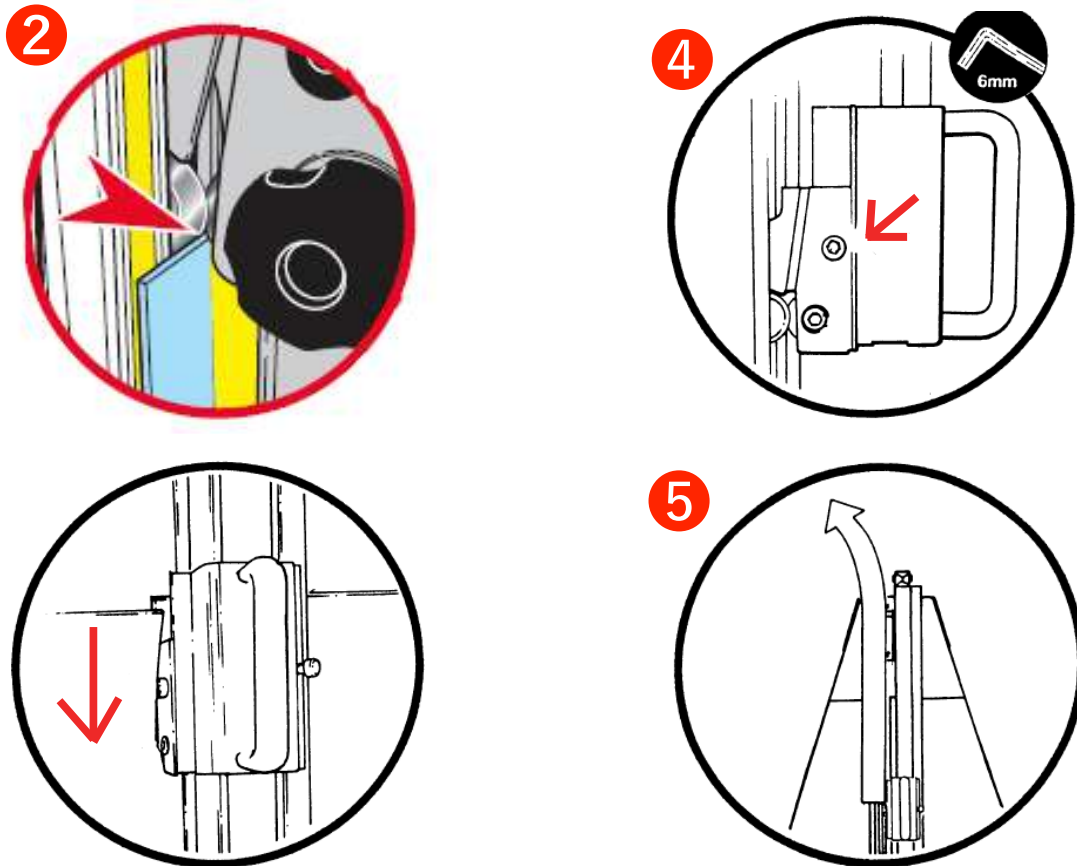
### Changing the scoring blade

Unlock and swing down the cutter guard, rotate the turret so the scoring blade is facing outwards.

4. Release the blade clamping screw.
5. Eject the medium duty utility blade using the black ejector pin, replace the blade to the right of the clamping plate, push the blade in as far as it will go and tighten the blade clamping screw. Rotate the turret back to the cutting position. Replace the guard ensuring it is locked closed.

*Replacement medium utility blades are available from Keencut or your distributor.*





The twin wheel cutter is mounted on the upper cutting head and is used for cutting rigid materials such as aluminium composite panel and MDF up to 3mm (1/8"). Many other softer boards and card can also be cut, trials should be carried out to ensure the desired quality of cut is obtained.

**NOTE:** The twin wheel cutter must be parked above the top level of the clamp when not in use otherwise the cutter will interfere with the sightline strip if the clamp is operated.

1. Position the material in the machine and apply the clamp.
2. Bring the twin wheel cutter down until it makes contact with the sheet edge and stop. Take a firm grip and then push the cutter down through the material without stopping.

The cutting wheels generally last more than a year with average use but this is dependant upon daily use and the material being cut. The signs the wheels are wearing out are:

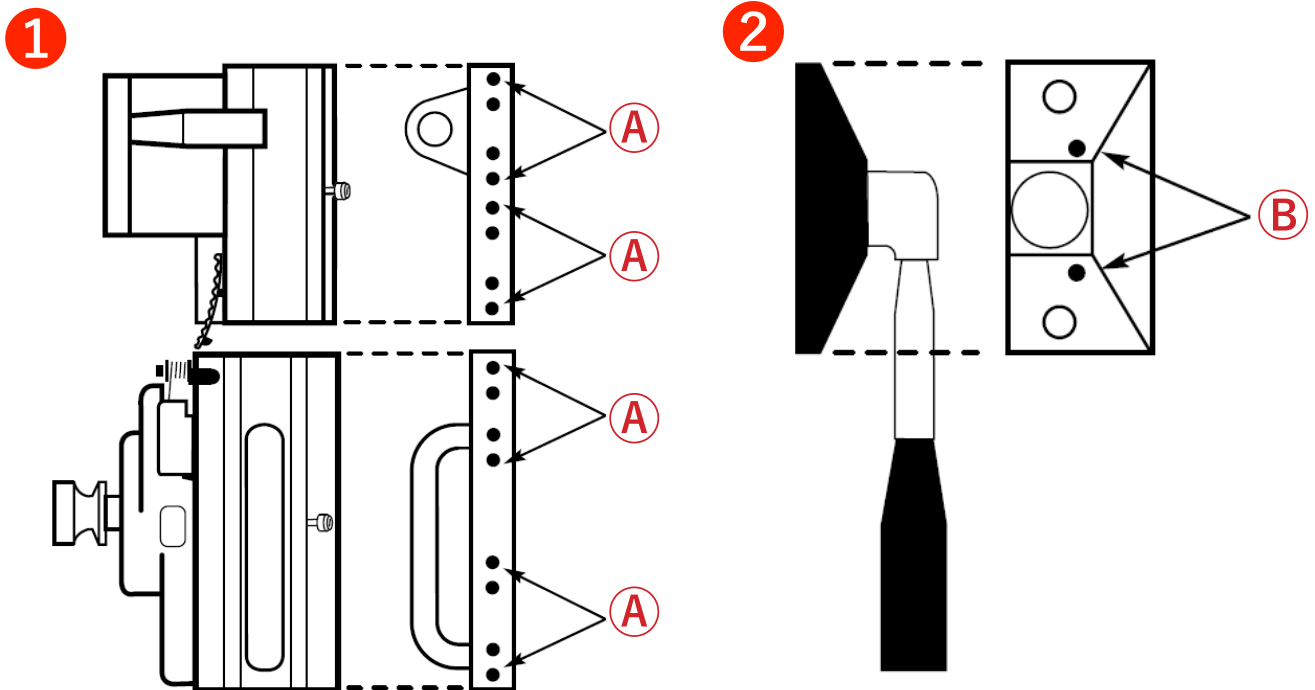
- A rough finish predominantly on the right hand side of the cut, with flaking on material such as MDF.
- The bottom of the cut bursting out rather than being cut neatly.
- The board trying to turn under the clamp when being cut (also check the clamp pressure).

### Changing the twin wheel cutter

Lock the cutting head at a convenient height using the white nylon locking screw.

3. Hold the twin wheel cutter and its guard to prevent them from falling and remove the screw with a 6mm hexagon wrench.
4. Slide the cutter towards the top of the main body and lift out.

*Replacement wheels or cutters are available from Keencut or your distributor.*



## Cleaning

Keencut machines are designed to be virtually maintenance free, however we do recommend regular cleaning. Do not wipe the squaring arm channels or remove any debris with fingers, as it may contain sharp particles such as glass. Use a vacuum cleaner if possible or if a soft brush is used, work slowly and do not allow particles to flick off the bristles.

## Lubrication

The slideway can be cleaned and lubricated occasionally using a silicone lubricant. Removing any excess with a cloth. The multi cutter assembly may require dusting out periodically do not lubricate or adjust without seeking further advice from your distributor or Keencut.

**DO NOT USE OIL ON ANY PART OF THE MACHINE**

*Except glass cutting oil on the glass cutting wheel only*

## Adjusting the sliding bearings

1. Attach the balance weight (see page 6.2) to the other cutting head, hold the cutter at waist height and place a 2mm hexagon wrench on the top adjustment screw. Move the cutting head up and down and tighten the screw very gradually until the cutting head does not fall under its own weight. Loosen the screw by the smallest amount you can until it does fall under its own weight. Repeat the process with the other three adjustment screws A.

## Adjusting the clamp pressure

2. The pressure of the clamp is in relation to the amount of pressure applied to the operating handle. However in time the maximum clamping pressure can reduce due to wear on the friction block (hidden within the machine), compensation for this can be made by adjusting the two small grub screws B in the operating handle housing as shown. Turning the screws clockwise will increase the maximum clamping pressure.
3. Turn both screws all the way in and then undo by a quarter of a turn, slight adjustment can be made to fine tune the pressure. Do not operate the clamp with the adjustment screws tight.